UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/578,609	11/03/2006	Fedrik Joabsson	613-107	3566

23117 7590 06/02/2010

NIXON & VANDERHYE, PC
901 NORTH GLEBE ROAD, 11TH FLOOR
ARLINGTON, VA 22203

EXAMINER	
KUMAR, PREETI	

ART UNIT	PAPER NUMBER
1796	

MAIL DATE	DELIVERY MODE
06/02/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/578,609	JOABSSON ET AL.	
	Examiner	Art Unit	
	PREETI KUMAR	1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 March 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *08 May 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Final Rejection

Response to Amendment

1. Claims 1-21 are pending. Claims 1, 8, and 20 are amended.

Priority

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), "Notice of Acceptance of Application Under 35 USC 371" dated January 10, 2007, which papers have been placed of record in the file.

Drawings

3. The drawings were received on 5/8/2006. These drawings are accepted.

Response to Arguments

4. Applicant's arguments filed 3/4/2010 have been fully considered but they are not persuasive. Applicant's urge there does not appear to be any disclosure of a composition having the stipulated 1-10% range of anionic structure forming amphiphile or of the need for these to have particular non-polar groups (C6-C32 alkyl/alkenyl), or the improvement in delivery of cationic peptides.

In response, Landh et al. teach the analogous composition comprising the analogous cationic peptide hormone, namely octreotide having a pI = 10, which teaching meets the limitations of claim 4. Regarding the prior art allegedly not containing the necessary 1-10% of anionic structure forming amphiphile (see column 11, lines 50-66 and column 17, line 35), Landh et al. teach, glycerol monooleate (GMO consisting of 98.8% monoglycerides, 1.0% glycerol, 1% diglycerides and 1.0% free fatty

acids in which the fatty acid composition has C16, C18 and C20 which teaching encompasses the claimed C6-C32 alkyl/alkenyl non-polar groups. See col.11,ln.35-50.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claims 1-4, 7-9, 11-17, 19-21 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Landh et al. (US 5,531,925).

Landh et al. teach colloidal particles, comprising an interior phase of a non-lamellar reversed cubic, intermediate or hexagonal liquid crystalline phase, or a homogeneous L3 phase, and a surface phase of a lamellar crystalline or liquid crystalline phase, or an L3 phase. A method of preparing such particles by creating a local dispersible phase, within the homogeneous phase, preferably by means of a fragmentation agent, and fragmentating the homogeneous phase so as to form said surface phase. Several medical as well as non-medical uses of the particles referred to, e.g. as an antigen-presenting system, as a delivery system for anticancer, antifungal and antimicrobial drugs, and as carriers of nucleic acids or nucleotides. See abstract.

Regarding the claimed cationic peptide active agent having an isoelectric point of above 7.0, Landh et al. teach somatostatin (octreotide), like most polypeptide hormones, has a very low solubility in water and tends to associate into various types of molecular aggregates. The solubility of monomeric somatostatin (molecular weight 1637.9) in aqueous solution has been estimated to be 0.3 mg/ml. Furthermore, it has a net charge of 4 and a pI=10. See col.14,ln.15-25.

Regarding the claimed active agent being released over a period of 2-14 days, Landh et al. teach liposome-associated polypeptides have been used to sustain the delivery of many polypeptides through various routes, and to some extent it has been shown that the delivery of intact and bioactive polypeptides can be prolonged for days and possibly longer. See col.22,ln.20-25.

Regarding the claimed neutral structure forming amphiphile, Landh et al. teach glycerol monooleate (GMO). See col.5,ln.15 and col.14,ln.15-45.

Regarding the fatty acid, Landh et al. teach that the GMO prepared by molecular distillation was purchased from Grindsted Products A/S, glycerol monooleate (GMO) (85-06) (074832-FF 8-009), (Braband, Denmark), and consisted of 98.8% monoglycerides, 1.0% glycerol, 1.0% diglycerides and 1.0% free fatty acids. The fatty acid composition was C16:0:0.5, C18:0:2.0, C18:1:92.3, C18:2:4.3, C18:3:trace, C20:4:0.5 wt. %, as stated by the supplier. Purified poloxamer 407, also name, Pluronic F-127, was obtained from BASF Corporation (Wyan-dotte, USA). Soybean phosphatidylcholine (SPC) was purchased from Lucas Meyr (Epikuron 200) with a fatty acid pattern according to Rydhag (1979) of: C8:0.8, C12:2:12.2. C16:1:0.4, C18:2.7, C18:1:10.7, C18:2:67.2 and C18:3:6.0. Double distilled water was used in all experiments. See col.11,ln.35-50.

Regarding the claimed 0.5 to 20% of at least one anionic structure forming amphiphile, Landh et al. teach amphiphilic polymers comprising anionic alkylsulfates; soaps; sulfosuccinates. See col.16,ln.31.

Regarding the claimed fragmentation agent, Landh et al. teach surface active polymers including glycoproteins as mucins and polysaccharides as alginate, propylene glycol alginate, gum arabic, xanthan, carragenan, polyvinylpyrrolidone (PVP) and carboxymethyl-cellulose. See col.10,ln.45-50.

Regarding the claimed oxygen containing biotollerable organic solvent, Landh et al. teach Delivery of oxygen can be achieved by the preparation of an oxygen carrier, such as the heme group in hemoglobulin or similar protein, in a cubic phase. Cubic phases in the system hemoglobulin-GMO-water have been investigated and are formed

with high amounts of protein (>5 wt. %). Such a system can be used as blood substitute and in connection with radiation therapy of cancer. The use of polymerizable lipids, in such systems as described above could be used to enhance stability and shelf-life. See col.27,ln.15-20.

Lundh et al. teach that diacylglycerol can be incorporated. See col.16,ln.38. In col.23, Lundh et al. illustrate intravenous somatostatin formulation in rabbit and intranasal insulin formulation in the rat. Accordingly, the teachings of Landh et al. appear to anticipate the material limitations of the instant claims.

Alternatively, even if the teachings of Landh et al. are not sufficient to anticipate the material limitations of the instant claims, it would have been nonetheless obvious to one of ordinary skill in the art, to arrive at 0.5 to 20% of at least one anionic structure forming amphiphile because Landh et al. teach amphiphilic polymers comprising anionic alkylsulfates; soaps; sulfosuccinates. See col.16,ln.31.

6. Claims 5, 6, 10, 18, are rejected under 35 U.S.C. 103(a) as being unpatentable over Landh et al. (US 5,531,925).

Landh et al. are relied upon as set forth above.

Landh et al. do not specifically teach the claimed oral bioavailability as recited by the instant claim 5. It would have been obvious to one of ordinary skill in the art, at the time the invention was made to arrive at the claimed oral bioavailability as recited by the instant claims, since Landh et al. teach the analogous peptide hormone, somatostatin (ocreotide) in a non-lamellar phase glycerol monoleate-somatostatin-water system for therapuetic intravenous delivery. The use of similar materials (i.e. somatostatin

(ocreotide) in a non-lamellar phase glycerol monoleate-somatostatin-water system) and in the similar steps (i.e. therapuetic intravenous administration) is reasonably expected to achieve the claimed oral availability.

Landh et al. do not specifically teach the claimed peptidase inhibitor as recited by the instant claim 6. It would have been obvious to one of ordinary skill in the art, at the time the invention was made to arrive at the claimed peptidase inhibitor as recited by the instant claims, since Landh et al. specifically motivate one of ordinary skill to protect from several properties of polypeptides and proteins that impede their delivery including their short biological half-life.

Landh et al. do not specifically teach the claimed increase of the half life of peptide active agent as recited by the instant claim 10. It would have been obvious to one of ordinary skill in the art, at the time the invention was made to arrive at the claimed increase of the half life of peptide active agent as recited by the instant claims, since Landh et al. teach the analogous peptide hormone, somatostatin (ocreotide) in a non-lamellar phase glycerol monoleate-somatostatin-water system for therapuetic intravenous delivery and Landh et al. specifically motivate one of ordinary skill to protect from several properties of polypeptides and proteins that impede their delivery including their short biological half-life in intravenous drug delivery.

Finally, Landh et al. do not specifically teach the claimed release of the active agent over 2 to 14 days as recited by the instant claim 18. It would have been obvious to one of ordinary skill in the art, at the time the invention was made to arrive at the claimed release of the active agent over 2 to 14 days as recited by the instant claims,

since Landh et al. specifically teach one of ordinary skill that for some polypeptides a duration of their delivery and a prolongation of their biological half-life may be of relevance and increase the bioavailability and/or efficiency. Currently most formulations of polypeptides have been concerned with the rather trivial question of increasing the biological half-life upon administration. Preparations such as liposome-associated polypeptides have been used to sustain the delivery of many polypeptides through various routes, and to some extent it has been shown that the delivery of intact and bioactive polypeptides can be prolonged for days. See col.22,ln.15-30.

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PREETI KUMAR whose telephone number is (571)272-1320. The examiner can normally be reached on 10:30 am-2:30 pm M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 571-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/P. K./
Examiner, Art Unit 1796

/Gregory R. Del Cotto/
Primary Examiner, Art Unit 1796